If you are using a printed copy of this procedure, and not the on-screen version, then you MUST make sure the dates at the bottom of the printed copy and the on-screen version match.
The on-screen version of the Collider-Accelerator Department Procedure is the Official Version.
Hard copies of all signed, official, C-A Operating Procedures are kept on file in the C-A ESHQ Training Office, Bldg. 911A.

C-A OPERATIONS PROCEDURES MANUAL

ATTACHMENT

4.120.54.e U-Down & V-Primary (PEER 25) Mode 24 Tests

C-A-OPM Procedures in which this Attachment is used.		
4.120.54		

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved: ***Signature on File*** _____
Collider-Accelerator Department Chairman Date

V. Castillo

4.120.54.e U-Down & V-Primary (PEER 25) Mode 24 Tests

PASS ANNUAL ACCEPTANCE TEST PROTOCOL

Division A Software Filename and Checksum: Title:_____ Checksum: _____

Division B Software Filename and Checksum: Title:_____ Checksum: _____

Initial testing complete:

Test Team Leader's Name (Print): _____Life Number:_____

Test Team Leader's Name (Sign): _____Date:_____/_____/_____

Acceptance test procedure complete (following repairs and retesting if required):

Test Team Leader's Name (Print): _____ Life Number:_____

Test Team Leader's Name (Sign): _____Date:_____/_____/_____

Test results reviewed by:

Safety Section Head's Name (Print):_____ Life Number:_____

Safety Section Head's Name (Sign):_____Date:_____/_____/_____

Test results accepted by Radiation Safety Committee:

RSC Member's Name (Print):_____Life Number: _____

RSC Member's Name (Sign):_____Date:_____/_____/_____

1.1 Test that CDs: PS UD1, 2 and H10 can only be Access Control Security (ACS) enabled in No Access (Mode24) and lose that enable with a broken Udn-Vpr keytree

	STATION	**One ACS person at UD1,2 PS** and another at **H10 PS**	
	PLACE	**Peer 25** in **Controlled Access (Mode 16)**	
□	**VERIFY**	**MCR** sees **Peer 25** in **CA**	**MODE 16**
□	**VERIFY**	**MCR** sees on CD page **Ud & Vp Critical Device**	**DISABLED**
□	**VERIFY**	Power Supply **UD1,2** is	**OFF**
□	**VERIFY**	**At UD1,2 CD encl 5605** Div A RIO **Output Leds 6 □ & 7 □** are	**OFF**
□	**VERIFY**	**At UD1,2 CD encl 5605** Div B RIO **Output Leds 6 □ & 7 □** are	**OFF**
□	**VERIFY**	ACS enable light, **red bullseye,** at **UD1,2 PS** is	**OFF**
□	**VERIFY**	Power Supply **H10** is	**OFF**
□	**VERIFY**	**At H10 CD encl 5607** Div A RIO **Output Leds 6 □ & 7 □** are	**OFF**
□	**VERIFY**	**At H10 CD encl 5607** Div B RIO **Output Leds 6 □ & 7 □** are	**OFF**
□	**VERIFY**	ACS enable light, **green led,** at **H10 PS** is	**ON**
	PLACE	**Peer 25** in **No Access (Mode 24)**	
□	**VERIFY**	**MCR** sees **Peer 25** in	**MODE 24**
	AFTER	**90 sec** timeout	
□	**VERIFY**	**MCR** sees on CD page **Ud & Vp Critical Device**	**ENABLED**
□	**VERIFY**	**At UD1,2 CD encl 5605** Div A RIO **Output Leds 6 □ & 7 □** are	**ON**
□	**VERIFY**	**At UD1,2 CD encl 5605** Div B RIO **Output Leds 6 □ & 7 □** are	**ON**
□	**VERIFY**	ACS enable light, **red bullseye,** at **UD1,2 PS** is	**ON**
□	**VERIFY**	Power Supply **UD1,2** is	**OFF**
□	**VERIFY**	**At H10 CD encl 5607** Div A RIO **Output Leds 6 □ & 7 □** are	**ON**
□	**VERIFY**	**At H10 CD encl 5607** Div B RIO **Output Leds 6 □ & 7 □** are	**ON**
□	**VERIFY**	ACS enable light, **green led,** at **H10 PS** is	**OFF**
□	**VERIFY**	Power Supply **H10** is	**OFF**
	UNCAPTURE	**Any key** in the **Udn-Vpr** keytree	
□	**VERIFY**	**MCR** sees **Peer 25** go to	**MODE 2**
□	**VERIFY**	**MCR** sees on CD page **Ud & Vp Critical Device**	**DISABLED**
□	**VERIFY**	**At UD1,2 CD encl 5605** Div A RIO **Output Leds 6 □ & 7 □** are	**OFF**
□	**VERIFY**	**At UD1,2 CD encl 5605** Div B RIO **Output Leds 6 □ & 7 □** are	**OFF**
□	**VERIFY**	ACS enable light, **red bullseye,** at **UD1,2 PS** is	**OFF**
□	**VERIFY**	Power Supply **UD1,2** is	**OFF**
□	**VERIFY**	**At H10 CD encl 5607** Div A RIO **Output Leds 6 □ & 7 □** are	**OFF**
□	**VERIFY**	**At H10 CD encl 5607** Div B RIO **Output Leds 6 □ & 7 □** are	**OFF**
□	**VERIFY**	ACS enable light, **green led,** at **H10 PS** is	**ON**
□	**VERIFY**	Power Supply **H10** is	**OFF**

	RECAPTURE	**Key**	
	PLACE	**Peer 25** in **Controlled Access (Mode 16)**	
□	**VERIFY**	**MCR** sees **Peer 25** in **CA**	**MODE 16**

□ **Check for acceptance of Test that Critical Device: Power Supply UD1, 2 can only be ACS enabled in No Access (Mode24) and loses that enable with a broken Udn-Vpr keytree**

1.2 Test any U-Down & V-Primary Security System Chipmunk for Radiation and Fail-Safe Interlocks and response of CDs: UD1,2 and H10.

	STATION	**One ACS person at UD1,2 PS** and another at **H10 PS**	
□	**VERIFY**	**MCR** sees **Peer 25** in **CA**	**MODE 16**
□	**VERIFY**	**MCR** sees on CD page **Ud & Vp Critical Device**	**DISABLED**
□	**VERIFY**	ACS enable light, **red bullseye,** at **UD1,2 PS** is	**OFF**
□	**VERIFY**	ACS enable light, **green led,** at **H10 PS** is	**ON**
	PLACE	**Peer 25** in **No Access (Mode 24)**	
□	**VERIFY**	**MCR** sees **Peer 25** in	**MODE 24**
	AFTER	**90 sec** timeout	
□	**VERIFY**	**MCR** sees on CD page **Ud & Vp Critical Device**	**ENABLED**
□	**VERIFY**	ACS enable light, **red bullseye,** at **UD1,2 PS** is	**ON**
□	**VERIFY**	ACS enable light, **green led,** at **H10 PS** is	**OFF**
	PRESS	**Test button** on Chipmunk **NMO #219** for **Radiation Interlock**	
□	**VERIFY**	**Peer 25** remains in **No Access**	**MODE 24**
□	**VERIFY**	**MCR** sees Div A □ and Div B □ Radiation	**TRIP**
□	**VERIFY**	**MCR** sees on CD page **Ud & Vp Critical Device**	**DISABLED**
□	**VERIFY**	ACS enable light, **red bullseye,** at **UD1,2 PS** is	**OFF**
□	**VERIFY**	ACS enable light, **green led,** at **H10 PS** is	**ON**
	CLEAR	**Rad** Interlock	
□	**VERIFY**	**MCR** sees **NMO #219** Div A □ and Div B □	**OK**
□	**VERIFY**	**MCR** sees on CD page **Ud & Vp Critical Device**	**ENABLED**
□	**VERIFY**	ACS enable light, **red bullseye,** at **UD1,2 PS** is	**ON**
□	**VERIFY**	ACS enable light, **green led,** at **H10 PS** is	**OFF**
	REMOVE	Power from **Chipmunk**	
□	**VERIFY**	**Peer 25** goes to **Safe Access**	**MODE 2**
□	**VERIFY**	**MCR** sees **NMO #219** Div A □ and Div B □	**FAIL**
□	**VERIFY**	**MCR** sees on CD page **Ud & Vp Critical Device**	**DISABLED**
□	**VERIFY**	ACS enable light, **red bullseye,** at **UD1,2 PS** is	**OFF**
□	**VERIFY**	ACS enable light, **green led,** at **H10 PS** is	**ON**

	ADD	Power to **Chipmunk**	
	CLEAR	Chipmunk **Interlocks**	
□	**VERIFY**	**MCR** sees **NMO #219** Div A □ and Div B □	**OK**
□	**VERIFY**	**Peer 25** is in **Safe Access**	**MODE 2**
□	**VERIFY**	**MCR** sees on CD page **Ud & Vp Critical Device**	**DISABLED**
□	**VERIFY**	ACS enable light, **red bullseye,** at **UD1,2 PS** is	**OFF**
□	**VERIFY**	ACS enable light, **green led,** at **H10 PS** is	**ON**
	PLACE	**Peer 25** in **Restricted Access (Mode 8)**	
□	**VERIFY**	**MCR** sees **Peer 25** in	**MODE 8**

□ **Check for acceptance of Test any U-Down & V-Primary Security System Chipmunk for Radiation and Fail-Safe Interlocks and response of CDs: UD1,2 and H10.**

1.3 Test Reachback Devices, AGS Injection Enable 1 and AGS Injection Enable 2, are interlocked on failure of Primary Critical Devices: PS UD1, 2 as sensed by A or B Division.

	PLACE	**Peer 25** in **Restricted Access (Mode 8)**	
□	**VERIFY**	**MCR** sees **Peer 25** is in	**MODE 8**
	STATION	**Personnel at Critical Device Box Encl # 5605 in Bldg H10 Bldg**	
	STATION	**Personnel at Critical Device Box Encl # 5470 in Bldg 921**	
	AT	**Bldg 921** Critical Device Box -**5470**	
□	**VERIFY**	**Div A** Relays: **K5** □ and **K12** □ are	**ON**
□	**VERIFY**	**Div B** Relays: **K6** □ and **K11** □ are	**ON**
	FOLLOW	Tests in **Table 1** below	

At UD1,2 PS, CD-Box 5605 Press & Hold	Verify at Bldg 921 CD-Box 5470, A Div relays go OFF	Verify at Bldg 921 CD-Box 5470, B Div relays go OFF	Verify Peer 25 goes to Mode 2	Release	Reset Reachback UD1, 2	Place Peer 25 in Mode 8	Verify Peer 25 in Mode 8	Go to next PB
PB1	□ **K5** □ **K12**	□ **K6** □ **K11**	□	**PB1**			□	
PB2	□ **K5** □ **K12**	□ **K6** □ **K11**	□	**PB2**			□	**End of test**

Table 1 - Test Reachback Devices, AGS Injection Enable 1 and AGS Injection Enable 2, are interlocked on failure of Primary Critical Devices: PS UD1, 2 as sensed by A or B Division.

□ **Check for acceptance of Test Reachback Devices, AGS Injection Enable 1 and AGS Injection Enable 2, are interlocked on failure of Primary Critical Devices: PS UD1, 2 as sensed by A or B Division.**

1.4 Test Reachback Devices, AGS Injection Enable 1 and AGS Injection Enable 2, are interlocked on failure of Primary Critical Device: H10, as sensed by A or B Division.

PLACE **Peer 25** in **Restricted Access (Mode 8)**
□ **VERIFY** **MCR** sees **Peer 25** is in **MODE 8**

STATION **Personnel at Critical Device Box Encl # 5607 in Bldg H10**
STATION **Personnel at Critical Device Box Encl # 5470 in Bldg 921**

AT **Bldg 921** Critical Device Box -**5470**
□ **VERIFY** **Div A** Relays: **K5** □ and **K12** □ are **ON**
□ **VERIFY** **Div B** Relays: **K6** □ and **K11** □ are **ON**

FOLLOW Tests in **Table 2** below

At H10 CD-Box 5607 Press & Hold	Verify at Bldg 921 CD-Box 5470, A-Div relays go OFF	Verify at Bldg 921 CD-Box 5470, B-Div relays go OFF	Verify Peer 25 goes to Mode 2	Release	Reset Reachback H10	Place Peer 25 in Mode 8	Verify Peer 25 in Mode 8	
PB1	□ **K5** □ **K12**	□ **K6** □ **K11**	□	**PB1**			□	**End of test**

Table2 - Test Reachback Devices, AGS Injection Enable 1 and AGS Injection Enable 2, are interlocked on failure of Primary Critical Device: H10, as sensed by A or B Division.

□ **Check for acceptance of Test Reachback Devices, AGS Injection Enable 1 and AGS Injection Enable 2, are interlocked on failure of Primary Critical Device: H10, as sensed by A or B Division.**

1.5 Test of Crash Operators in U-Dn area

STATION **Test personnel** in **U-Dn** area

PLACE **Peer 25** in **No Access Mode**

□ **VERIFY** **MCR** sees **Peer 25** in **MODE 24**

□ **VERIFY** **No Access Alarm** for **Div A** □ and **Div B** □ is **ON**

FOLLOW Tests in **Table 3** below

Pull Crash cord while alarm sounds	Verify Alarm stops		Verify Peer 25 goes to Mode 2		Reset Crash	Place Peer 25 in Mode 24	
	Div A	Div B	Div A	Div B			
Udn CO – 2	□	□	□	□			End of test

Table 3 – Test of Crash Operator in U-Dn area

□ **Check for acceptance of Test of Crash Operator in U-Dn area**

1.6 Test of Crash Button in V-Primary area

□ **Check for Test Omission due to area Contamination**

STATION **Test personnel** in **V-Primary** area

PLACE **Peer 25** in **No Access Mode**

□ **VERIFY** **MCR** sees **Peer 25** in **MODE 24**

□ **VERIFY** **No Access Alarm** for **Div A** □ and **Div B** □ is **ON**

FOLLOW Tests in **Table 4** below

Press Crash button while alarm sounds	Verify Alarm stops		Verify Peer 25 goes to Mode 2		Reset Crash	Place Peer 25 in Mode 24	
	Div A	Div B	Div A	Div B			
CB – 2	□	□	□	□			End of test

Table 3 – Test of Crash Button in V-Primary area

□ **Check for acceptance of Test of Crash Buttons in V-Primary area**

□ **Check for acceptance of Test Omission due to area Contamination**

1.7 Test that opening gate UGE2 in No Access, Mode 24, causes Peer 25 to go to Safe mode

	STATION	**Test personnel** inside **UGE2** gate	
	PLACE	**Peer 25** in **No Access** mode	
□	**VERIFY**	**MCR** sees **Peer 25** in	**MODE 24**
□	**VERIFY**	Alarms for **Div A** □ and **Div B** □	**O.K.**
	WAIT	For 90 sec **timeout** to **expire**	
	OPEN	Gate **UGE2** from **inside** and **hold open**	
□	**VERIFY**	**MCR** sees **Peer 25** Div A □ and Div B □ go to	**MODE 2**
□	**VERIFY**	**MCR** sees **UGE2 gate** Div A □ and Div B □	**OPEN**
□	**VERIFY**	**MCR** sees **Peer 25 U-Dn** Div A □ and Div B □	**NO SWEEP**
	CLOSE	Gate **UGE2**	
□	**VERIFY**	**MCR** sees **UGE2 gate** Div A □ and Div B □	**CLOSED**
	PLACE	**Peer 25** in **Restricted Access** mode	
□	**VERIFY**	**MCR** sees **Peer 25** in	**MODE 8**

□ **Check for acceptance of Test that opening gate UGE2 in No Access, Mode 24, causes Peer 25 to go to Safe mode**

1.8 Test that opening gate VPGE1 in No Access, Mode 24, causes Peer 25 to go to Safe mode; need #225 key for entry

	STATION	**Test personnel** inside **VPGE1** gate	
	PLACE	**Peer 25** in **No Access** mode	
□	**VERIFY**	**MCR** sees **Peer 25** in	**MODE 24**
□	**VERIFY**	Alarms for **Div A** □ and **Div B** □	**O.K.**
	WAIT	For 90 sec **timeout** to **expire**	
	OPEN	Gate **VPGE1** from **inside** and **hold open**	
□	**VERIFY**	**MCR** sees **VPGE1 gate** Div A □ and Div B □	**OPEN**
□	**VERIFY**	**MCR** sees **Peer 25** Div A □ and Div B □ go to	**MODE 2**
□	**VERIFY**	**MCR** sees **Peer 25 U-Dn** Div A □ and Div B □	**NO SWEEP**
	CLOSE	Gate **VPGE1**	
□	**VERIFY**	**MCR** sees **VPGE1 gate** Div A □ and Div B □	**NOT RESET**
	PLACE	**Peer 25** in **Restricted Access** mode	
□	**VERIFY**	**MCR** sees **Peer 25** in	**MODE 8**

□ **Check for acceptance of Test that opening gate VPGE1 in No Access, Mode 24, causes Peer 25 to go to Safe mode**

1.9 Test that all keys captive is a necessary condition for No Access mode

	PLACE	**Peer 25** in **Restricted Access** mode	
□	**VERIFY**	**MCR** sees **Peer 25** in	**MODE 8**
	CAPTURE	All **EB006** and **EB007** keys	
□	**VERIFY**	**All** EB006: 1 □, 2 □, 3 □, 4 □, 5 □, 6 □ and EB007: 1 □, 2 □ are	**CAPTURED**
	CAPTURE	All **EB004** and **EB005** keys	
□	**VERIFY**	**All** EB004: 1 □, 2 □, 3 □, 4 □, 5 □, 6 □ and EB005: 1 □, 2 □ are	**CAPTURED**
	AT	**Above MCR** terminal room	
□	**VERIFY**	**Peer 1A** output **3/1** is	**ON**
□	**VERIFY**	**Peer 1B** output **2/15** is	**ON**
	FOLLOW	Tests in **Table 4**, below	

Remove key	**Verify LEDs go OFF**		**Capture key**	**Verify LEDs go ON**		**Go to next key**
	Peer 1A output 3/1	**Peer 1B output 2/15**		**Peer 1A output 3/1**	**Peer 1B output 2/15**	
EB004-1	□	□		□	□	
EB004-2	□	□		□	□	
EB004-3	□	□		□	□	
EB004-4	□	□		□	□	
EB004-5	□	□		□	□	
EB004-6	□	□		□	□	
EB005-1	□	□		□	□	
EB005-2	□	□		□	□	**Back to test**

Table 4 – Removal and Capture of EB004 and EB005 keys

	PLACE	**Peer 25** in **No Access** mode	
□	**VERIFY**	**MCR** sees **Peer 25** in	**MODE 24**
	PULL	**Any** EB004 **or** EB005 **key**	
□	**VERIFY**	**Peer 1A** output **3/1** goes	**OFF**
□	**VERIFY**	**Peer 1B** output **2/15** goes	**OFF**
□	**VERIFY**	**MCR** sees **Peer 25** Div A □ and Div B □ go to	**MODE 2**
	PLACE	**Peer 25** in **Restricted Access** mode	
□	**VERIFY**	**MCR** sees **Peer 25** in	**MODE 8**

□ **Check for acceptance of Test that all keys captive is a necessary condition for No Access mode**

END OF TEST PROCEDURE

TTL: Sign for completion of initial testing: _____

Date: _____/____/_____

TTL: Sign for completion of final testing: _____

Date: _____/_____/_____